REPORT ON
PROGRESS MADE TOWARD
THE NATIONAL VISIBILITY GOAL

November 2005

By

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I. Introduction:

In 1988, the Department adopted a long-term strategy (10-15 year plan) for making reasonable progress toward the national visibility goal. This goal, as stated in 40 CFR 52.300(a), is to prevent any future visibility impairment and to remedy any existing man-made impairment in any Mandatory Class I area. The current strategy addresses any visibility impairment that is reasonably attributable to a specific source or a small group of sources.

The strategy lists several steps the Department will follow in order to achieve the national visibility goal. The Department is also required to review, and revise if appropriate, the long-term strategy. The review and revisions are to be completed no less frequently than every three years. The last review was in 2002. The long-term strategy lists the items to be addressed in this report. This report lists the findings of our review and the revisions the Department intends to implement.

There are four Class I areas in North Dakota. They consist of the three units of the Theodore Roosevelt National Park (North Unit, South Unit and Elkhorn Ranch Unit) and the Lostwood Wilderness Area. The South Unit of Theodore Roosevelt National Park (TRNP) encompasses approximately 46,000 acres in central Billings County.

The Elkhorn Ranch Unit is located approximately 15 miles north of the South Unit in Billings County and is approximately 200 acres in size. The North Unit of TRNP is located in McKenzie County and covers approximately 24,000 acres. The Lostwood Wilderness Area (LWA) is located in Burke County and encompasses approximately 5,600 acres. Figure 1 shows the location of the North Dakota Class I areas as well as the Medicine Lake Wilderness Area and the non-federal Class I Fort Peck Indian Reservation in Montana. The federal land manager (FLM) for the TRNP is the National Park Service (NPS) and the U.S. Fish and Wildlife Service (FWS) is the federal land manager for the Lostwood Wilderness Area.

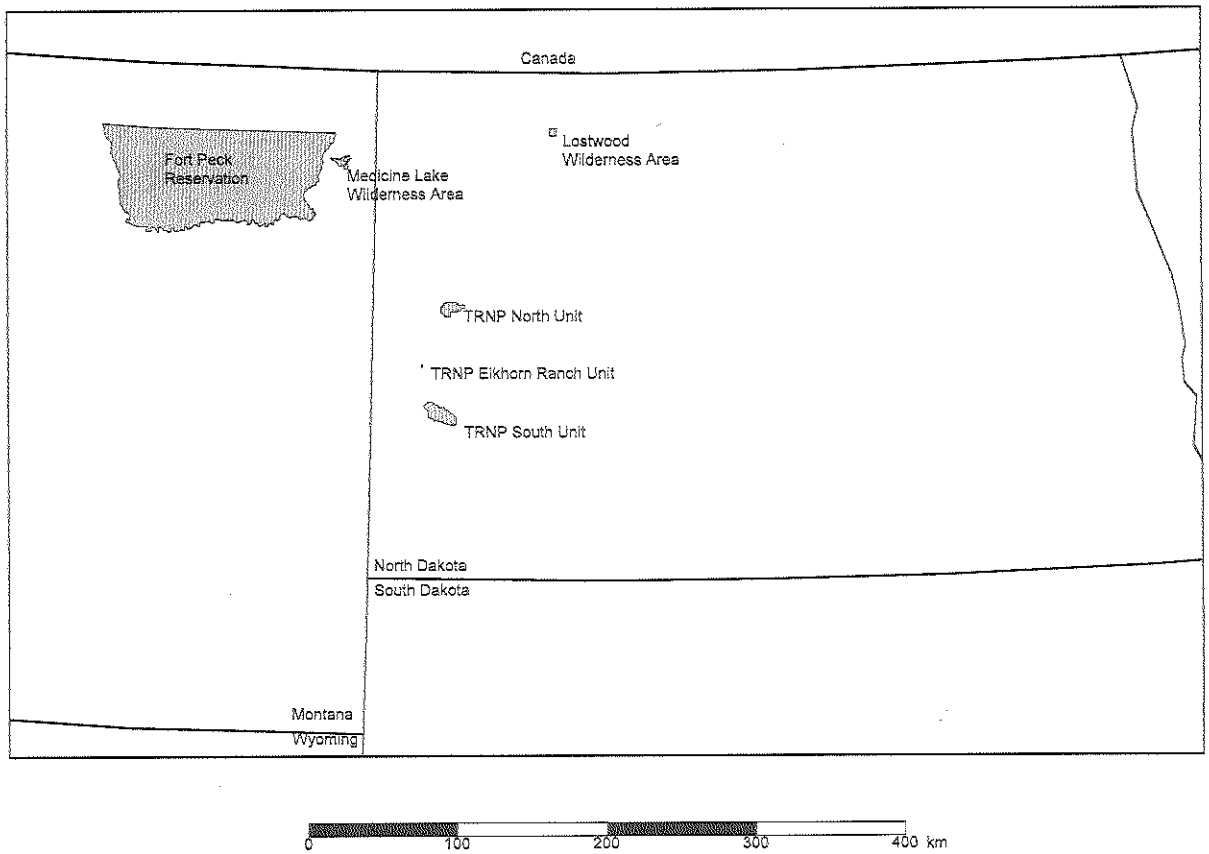
II. Progress Made Toward the National Visibility Goal:

A. **The progress achieved in remedying any visibility impairment that is identified in any Mandatory Class I Federal Areas.**

In 1985, the Assistant Secretary for Fish and Wildlife and Parks (i.e., the Department of the Interior (DOI) level Federal Land Manager for Class I areas managed by the NPS and FWS) certified existing visibility impairment to the Environmental Protection Agency at all NPS monitoring locations within the lower 48 United States

FIGURE 1

Class I Areas in Vicinity of North Dakota



due to uniform haze. The certification included the NPS position "that all NPS Class I and Class II areas in the lower 48 states are being affected by this visibility degrading uniform haze." In 1987, the DOI repeated this certification of impairment and expanded it to include all Class I areas managed by the FWS.

It is believed that degradation of visibility in the Class I areas in North Dakota is due to regional haze. This haze may be caused by sources within North Dakota, other surrounding states, Canada and even Asia. Since the long-term strategy was developed, several major sources of sulfur dioxide, nitrogen oxides and particulate matter within North Dakota have shut down and three sources have had their Permit to Construct expire.

The sources that have shut down include:

Koch Hydrocarbon Company

Trenton Gas Plant

Williams County

Koch Hydrocarbon Company

Boxcar Butte Plant

McKenzie County

Royal Oak, Inc.

Charcoal Briquette Plant

Stark County

Western Gas Processing

T.R. Plant

Billings County

Amerada Hess Corporation

Temple Gas Plant

Williams County

Since the last review, two additional major sources of sulfur dioxide have stopped emitting to the atmosphere. These sources, natural gas processing plants, have begun injecting their acid gas from the amine treating units into deep injection wells. Because of this injection, sulfur dioxide and nitrogen oxides emissions from the tail gas incinerators of the sulfur recovery units were eliminated. The two sources are:

Bear Paw Energy, LLC

Lignite Gas Plant

Burke County

Bear Paw Energy, LLC

Grasslands Gas Plant

McKenzie County

The Lignite Gas Plant is located approximately 14 miles north-northwest of the Lostwood Wilderness Area. In 2002, sulfur dioxide emissions from the facility totaled 426 tons.

The Grasslands Gas Plant is located approximately 25 miles directly west of the North Unit of TRNP. Sulfur dioxide emissions from the facility totaled 538 tons in 2001.

The following sources that did not construct before their Permit to Construct expired include:

Basin Electric Power Cooperative

Antelope Valley Station No. 3

Mercer County

Nokota Company

Methanol Plant

Dunn County

Enron Gas Processors

Rawson Plant

McKenzie County

Since the development of the long-term strategy, five Permits to Construct have been issued to new or modified major sources (> 100 tpy) of sulfur dioxide. A revised Permit to Construct was issued to Dakota Gasification Company which allowed an increase of approximately 8,000 tons per year of sulfur dioxide. However, this permit limited potential emissions to approximately 14,000 tons of sulfur dioxide per year which is substantially less than 1996 actual emissions of approximately 49,000 tons. During the Prevention of Significant Deterioration (PSD) review process, a visibility impact analysis was completed. The analysis indicated no adverse impact on the Class I areas of the State. Sulfur dioxide emissions from the facility in 2004 were 3886 tons.

The other sources were the Minot Air Force Base, ProGold, LLC (now Cargill Corn Milling), Red Trail Energy, LLC and MDU/Westmoreland Power, Inc. The Minot AFB and ProGold, LLC sources were not subject to PSD review since potential emissions are less than the 250 ton per year applicability threshold. The Minot Air Force Base is located approximately 100 kilometers from the nearest Class I area while the ProGold facility is over 250 kilometers away from the nearest Class I area. Therefore, these sources should have minimal impact on any Class I area. The Red Trail Energy facility and the MDU/Westmoreland facility were subject to PSD review and a visibility assessment was prepared. Each assessment indicated no adverse impact on visibility.

Major sources (> 100 tpy) of nitrogen oxides emissions, in addition in the sulfur dioxide sources listed above, that have been permitted since the development of the long-term strategy include:

Alliance Pipeline Company

Fairmount Station - Richland County

Wimbledon Station - Barnes County

Towner Station - McHenry County

Continental Resources, Inc.

Medicine Pole Hills - Bowman County

Hillsboro Municipal Electric Utility -

Traill County

Northern Border Pipeline Co.

Station #5 - Dunn County

Station #7 - Morton County

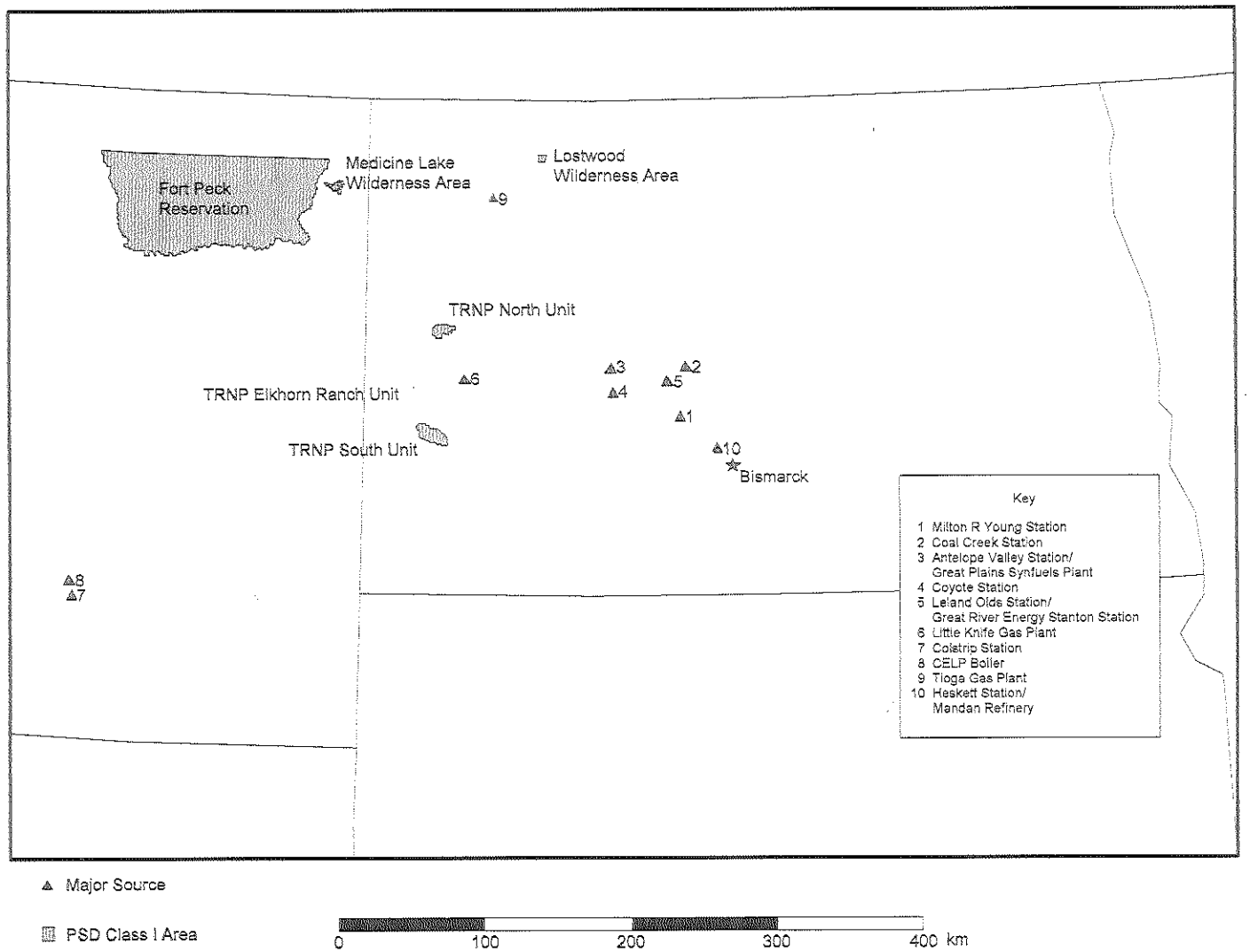
All of these NO_x sources, except the Gascoyne Generating Station, have potential emissions less than 250 tons/yr and are located at least 50 km from any Class I area. The Gascoyne Generating Station has an NO_x potential-to-emit of 834 tons/yr.

Figure 2 shows the location of the largest existing sources of SO_2, NO_x, and particulate matter in North Dakota.

B. **The ability of the long-term strategy to prevent future impairment of visibility in any Mandatory Class I Federal Area.**

FIGURE 2

Major SO2 Sources and PSD Class I Areas



The Class I areas in North Dakota are located in rural areas of the western part of the State. From 1980 to 2000, the population of North Dakota decreased nearly 2%.

Any increase in population has been associated with the larger urban areas (> 25,000 population). These areas are located at least 100 km from the Class I areas in the opposite direction of the prevailing winds (see Appendix A for windroses).

There has been little industrial growth in North Dakota since the long-term strategy was developed. A new ethanol production plant and 175 MW power plant have been permitted; however, operation of the facilities has not begun. Any new major stationary source is reviewed to determine its effect on visibility in the Federal Class I areas. Each of these facilities were reviewed during the PSD permitting process in accordance with the requirements of NDAC 33-15-19, Visibility Protection. The Department determined that each facility would not adversely affect visibility in any Federal Class I area.

The Department believes the strategy, combined with the FLAG guidance and the upcoming 2007 regional haze SIP

required by the 1999 Federal Regional Haze Rule will prevent any significant new visibility impairment. Therefore, no change to the strategy is planned.

C. **Any change in visibility since the last such report.**

In the document titled *Theodore Roosevelt National Park, Environmental Assessment, Boundary Expansion Study*[1], the National Park Service states "visibility at Theodore Roosevelt National Park is excellent, with distant topography visible". Based on personal observations by staff, the Department concurs with this statement.

There is limited direct monitoring data to show any change in visibility since the last report or since the strategy was developed. In December 1999, visibility monitoring sites were established in the TRNP - South Unit and Lostwood Wilderness Area. These sites were established as part of the Interagency Monitoring of Protected Visual Environment (IMPROVE) Program. Data from the sites are available from December 1999 to the end of May of 2004. The results of this monitoring are shown in Figure 3 for the South Unit of TRNP and Figure 4 for the Lostwood Wilderness Area. For the approximately four years of monitoring data available,

[1]NPS, 2002. Theodore Roosevelt National Park, Environment Assessment, Boundary Expansion Study, November 2002. U.S. National Park Service, U.S. Department of Interior.

FIGURE 3
TRNP - SOUTH UNIT
VISIBILITY IMPAIRMENT

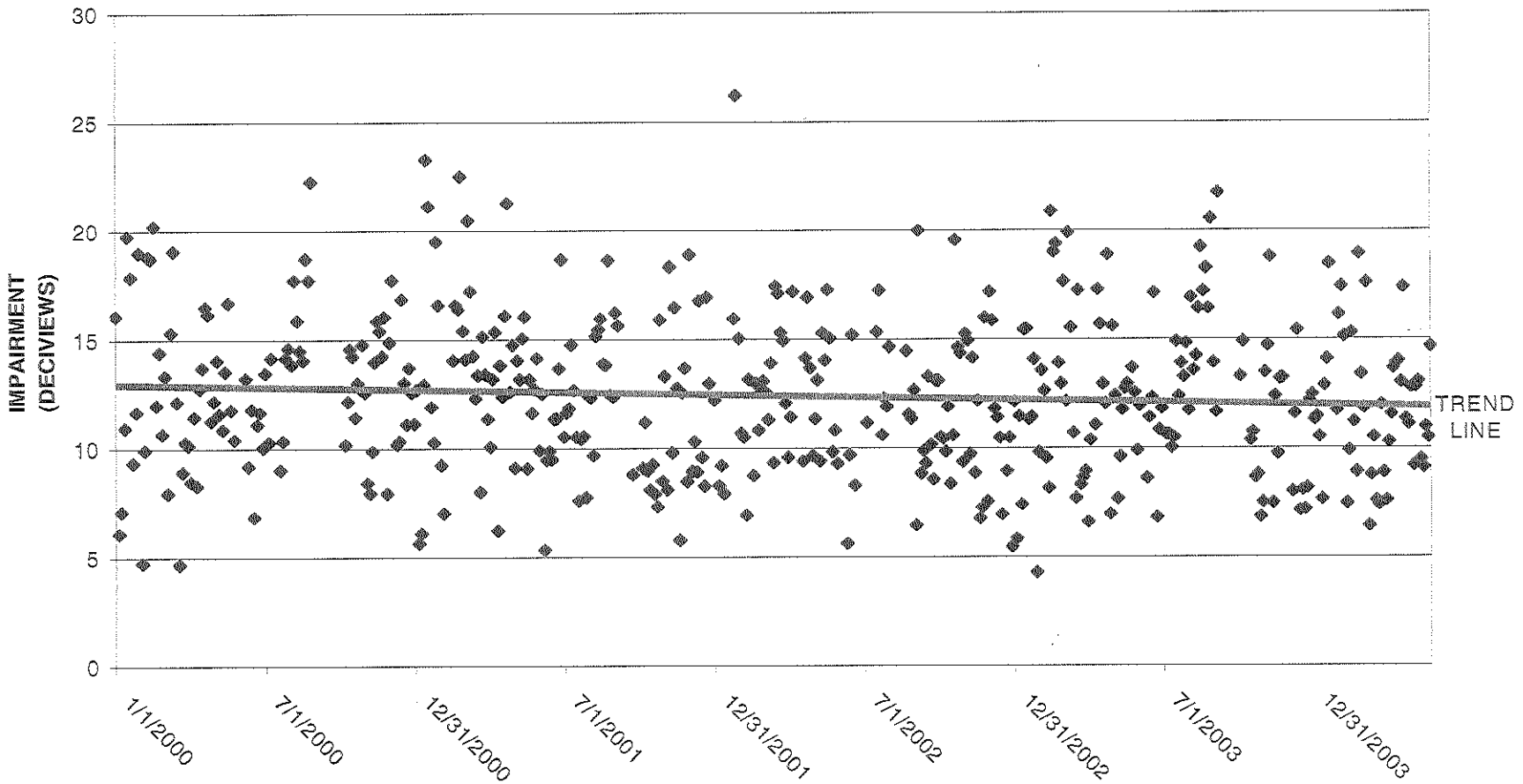
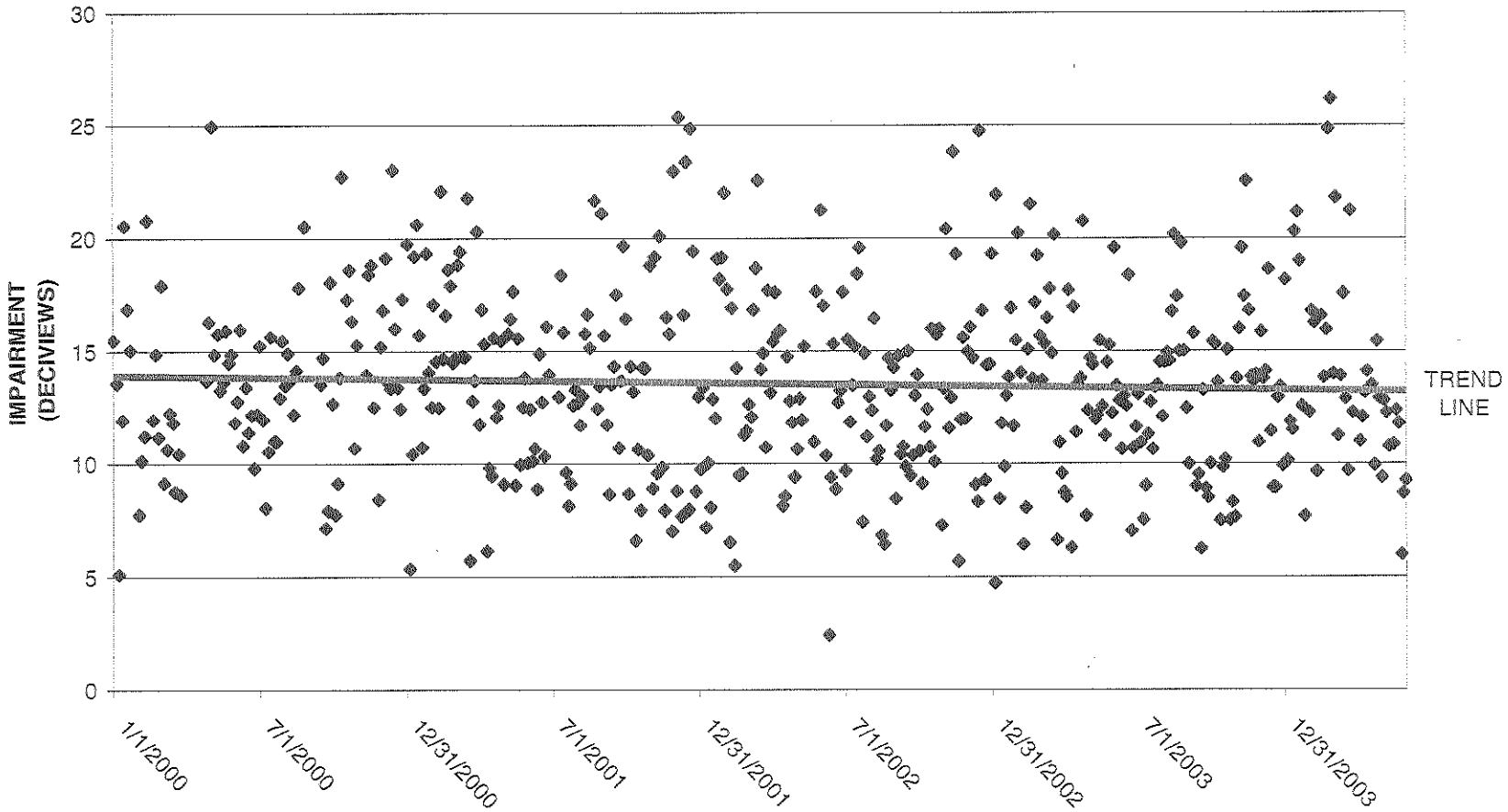


FIGURE 4
LOSTWOOD WILDERNESS AREA
VISIBILITY IMPAIRMENT



there appears to be no significant change in visibility impairment. If any trend can be extracted from the data, it would suggest that a slight improvement may be occurring at both locations. However, establishment of a definitive trend may require additional data.

Figure 5 shows a comparison of average visibility impairment for the period January 2000 - May 2004 for the Class I areas in North Dakota and surrounding states. The average impairment does not vary dramatically from one Class I area to another. An analysis of the 20% least impaired and 20% most impaired days at these Class I areas is shown in Figures 6 and 7. Although the North Dakota Class I areas have larger average impairment values (deciviews) on the least impaired days, other Class I areas have higher average impairment values for the 20% most impaired days.

As indicated earlier, there is little direct visibility monitoring data; however, other indirect data suggest that visibility impairment in the Class I areas due to North Dakota sources should have remained the same or improved. Since the long-term strategy was developed,

FIGURE 5
VISIBILITY IMPAIRMENT

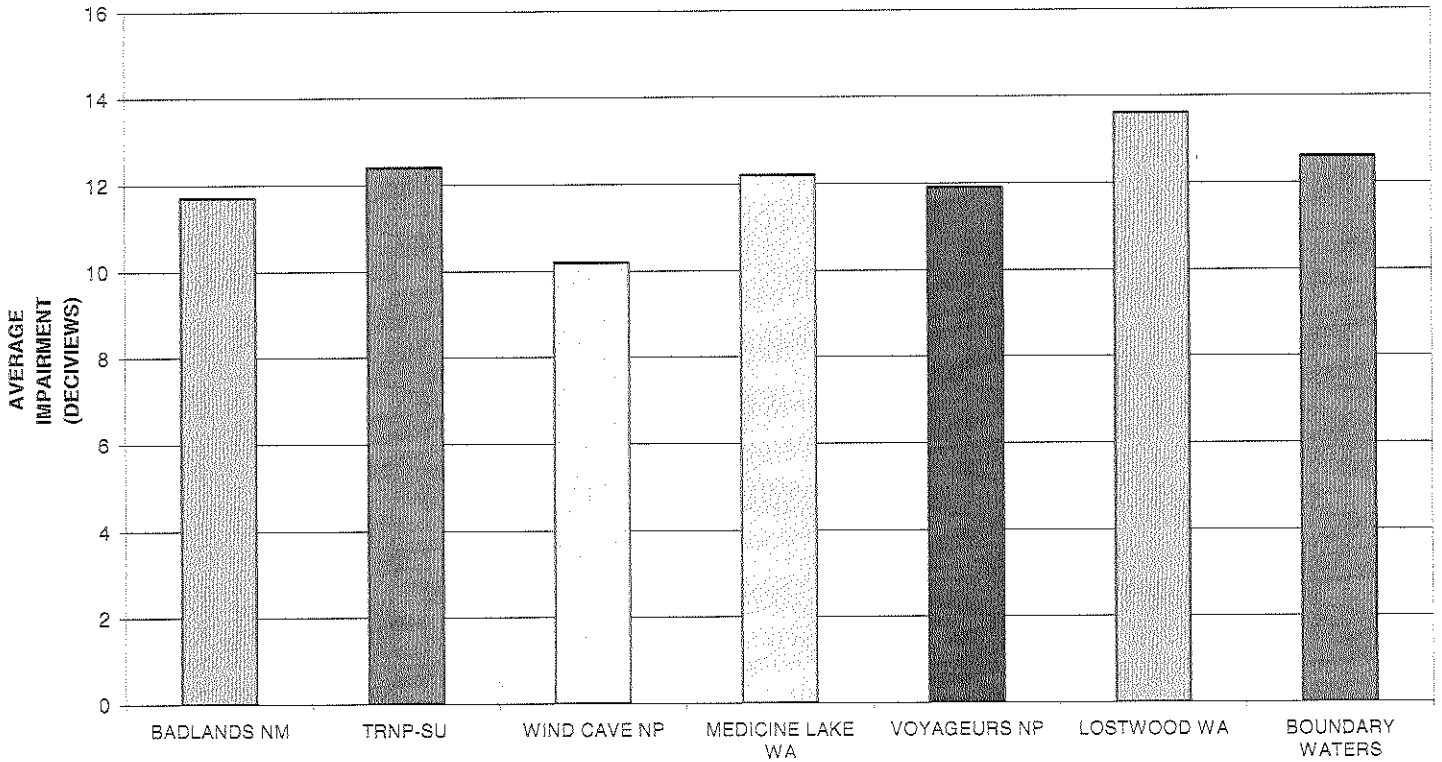


FIGURE 6
VISIBILITY IMPAIRMENT
20% LEAST IMPAIRED DAYS

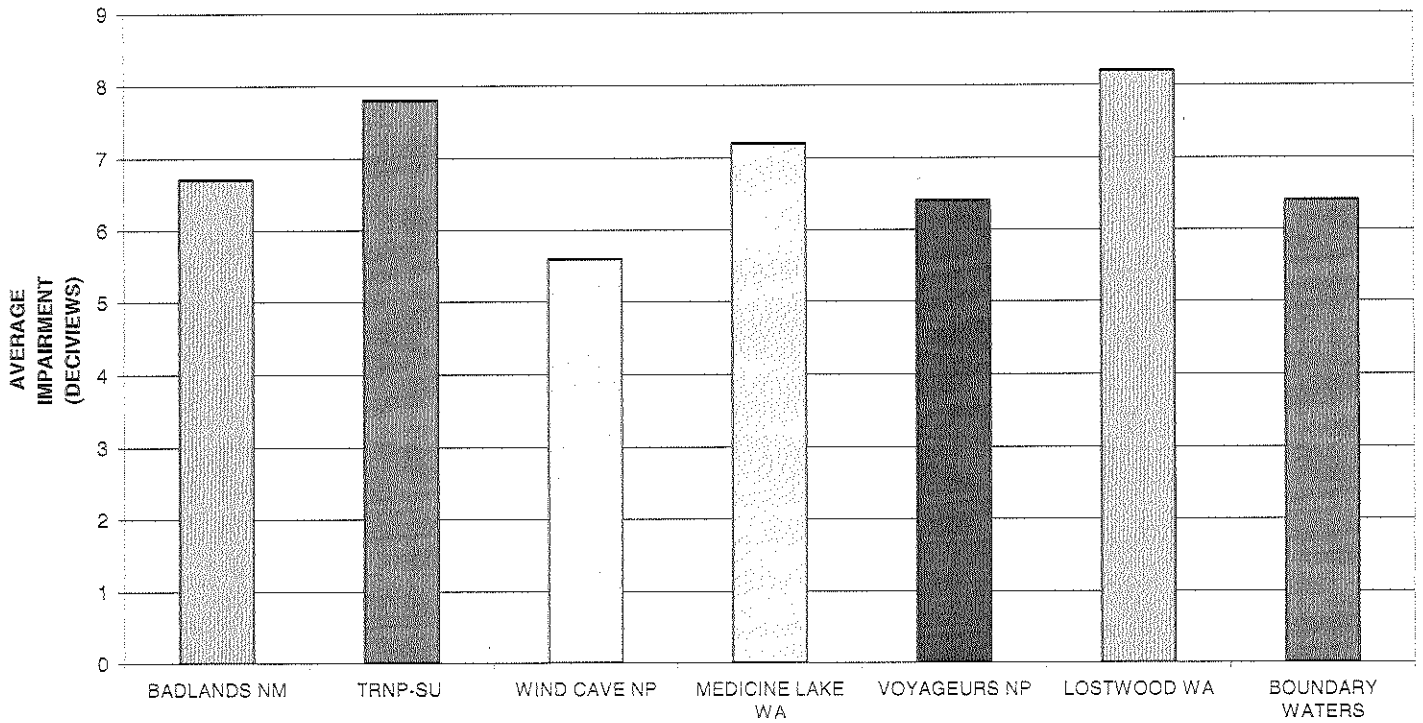
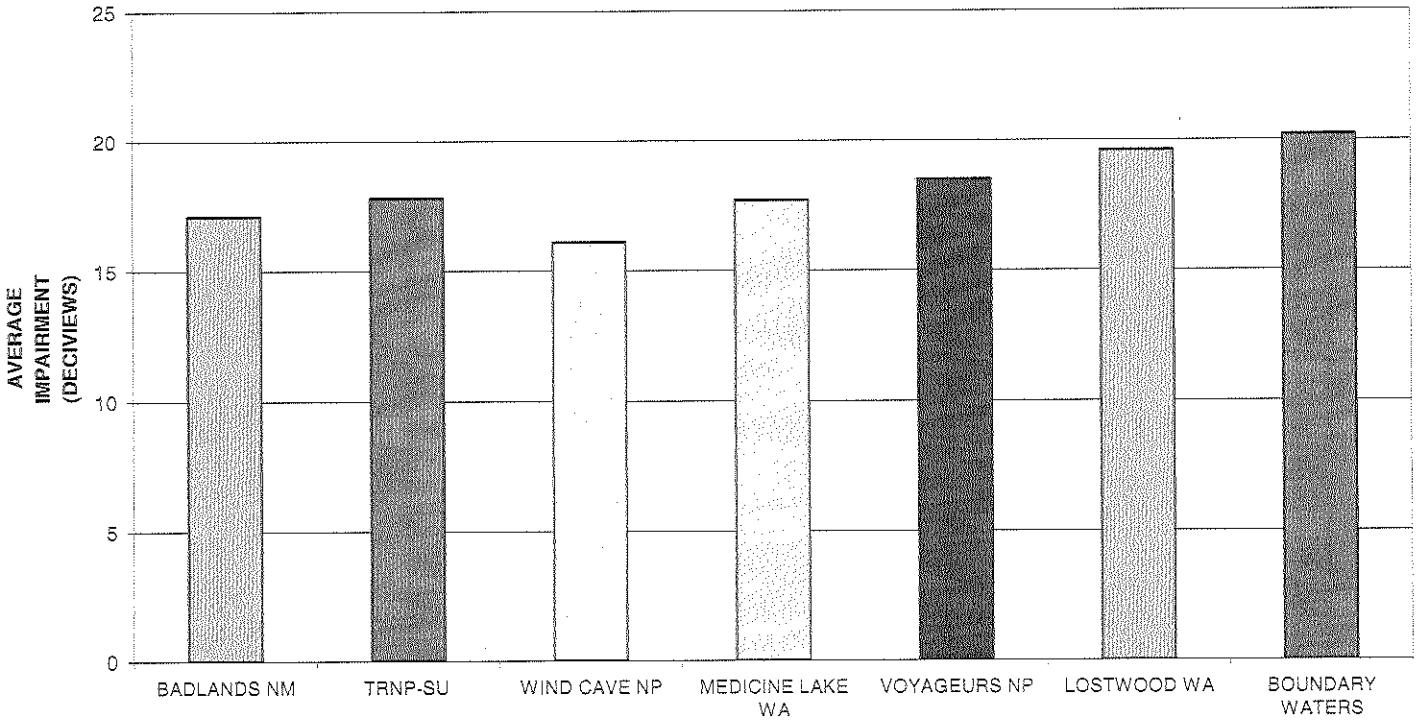


FIGURE 7
VISIBILITY IMPAIRMENT
20% MOST IMPAIRED DAYS



emissions of sulfur dioxide, nitrogen oxides and particulate matter have all declined. Table 1 shows the results of the Department's analysis of emissions. Data for all years from 1988 - 2004 can be found in Appendix A.

Table 1
Emissions Summary

Contaminant	1988 Emissions (tons)	2001 Emissions (tons)	2004 Emissions (tons)	Change 1988-2004 (%)	Change 2001-2004 (%)
SO_2	218,558	182,343	168,615	-22.9	-7.5
NO_x	117,380	91,077	88,626	-24.5	-2.7
Particulate Matter	11,967	8,484	4,296	-64.1	-49.4

The primary sources of sulfur dioxide, nitrogen oxides and particulate matter in North Dakota are the seven electric utility steam generating plants, the Tesoro Refinery and the Great Plains Synfuels Plant. These nine facilities emitted 94% of the sulfur dioxide, 92% of the nitrogen oxides, and 63% of particulate matter from point sources tracked in North Dakota during 2004.

The plants are generally NE to E of the TRNP South Unit, ESE to SE of the North Unit of TRNP and SE of LWA. The prevailing winds in the South Unit are NW to SW and from the W to NW for the North Unit (see windroses in Appendix

A). Although some wind direction data is available for the Lostwood Wilderness Area during this period, more data is available from the North Dakota Agricultural Weather Network (NDAWN) site at Bowbells, North Dakota. Bowbells, North Dakota is located approximately 13 miles northeast of the Lostwood Wilderness Area in Burke County. The NDAWN data indicates prevailing winds are from the WSW to NW (see windrose in Appendix A).

In all cases, the prevailing winds tend to move air contaminant emissions from the primary sources in North Dakota away from the Class I areas. Although there are times when winds will send contaminants towards the Class I areas, they are limited.

In the document titled *Air Quality in National Parks*[2], the National Parks Service indicates that sulfate ion concentration at TRNP has shown "significant improvement" from 1990-1999 and sulfate ion wet deposition for the same period has shown "improvement". However, the document also indicates there was "degradation" from

[2]NPS, September 2002. Air Quality in the National Parks, Second Edition. National Park Service, U.S. Department of Interior, Air Resources Division

inorganic nitrogen wet deposition and mean nitrate ion concentration.

The National Park Service's deposition monitoring results are just opposite to emission trends in North Dakota for the 1990-99 period. During this period, sulfur dioxide emissions tended somewhat higher and nitrogen oxides emissions dropped dramatically (23%) and have continued to decline. The National Park Service has indicated that no additional data is available for the 2000 - 2004 time period.

Although visibility monitoring data is available for the Class I areas and no discernible trends were identified, the Department's ambient air quality monitoring data indicates that the average concentration of sulfur dioxide, nitrogen oxides (NO, NO_2) and particulate matter (PM_{10}) has remained the same or decreased in each of the Class I areas since the long-term strategy was developed (see Appendix A).

Based on the available data, the Department believes that any visibility degradation in the mandatory Class I areas is uniform haze due to regional sources. The data also

suggests that any degradation caused by North Dakota sources has remained stable or decreased since the last review and since the long-term strategy was developed.

D. **Additional measures, including the need for SIP revisions, that may be necessary to assure reasonable progress toward the national visibility goal.**

To date, no visibility impairment reasonably attributable to a specific source or sources in North Dakota has been identified by the Department or certified by the Federal Land Manager. Regional haze appears to be the primary visibility degradation that exists in the Class I areas. The haze may be caused by anthropogenic and/or natural sources. Visibility degradation due to sources within the United States will be addressed in the upcoming regional haze SIP. Although there are a number of Canadian sources along North Dakota's northern border that may contribute to visibility degradation in North Dakota Class I areas, the state has no control over such sources. The Department believes the SIP is adequate for controlling emissions which may cause reasonably attributable visibility impairment within its jurisdiction and no further revisions are needed.

E. **The progress achieved in implementing best available retrofit technology (BART) and meeting other schedules set forth in the long-term strategy.**

The Department believes there is no need to impose reasonably attributable BART requirements. Regional haze BART will be imposed when the regional haze SIP is implemented.

There were no other schedules contained in the long-term strategy.

F. **The impact of any exemption to BART requirements.**

Not applicable.

G. **The need for BART to remedy existing visibility impairment in an integral vista declared since plan approval.**

No integral vistas have been declared in the State Implementation Plan. There are no plans to include any integral vistas in the SIP.

III. Summary:

To date, no visibility degradation that is reasonably attributable to a specific source or sources in North Dakota has been identified by the Department or certified by the Federal Land Manager in any Class I area in North Dakota. Regional sources continue to be the cause of reduced visibility. The Department believes that the severity of visibility degradation due to North Dakota sources has remained constant or improved since the long-term strategy was developed. Therefore, no revisions to the State Implementation Plan, including the long-term strategy, are necessary at this time. There is no need to implement reasonably attributable BART for sources in North Dakota. The Department will develop and implement a regional haze SIP in 2007.

Appendix A

Supporting Data

Appendix A

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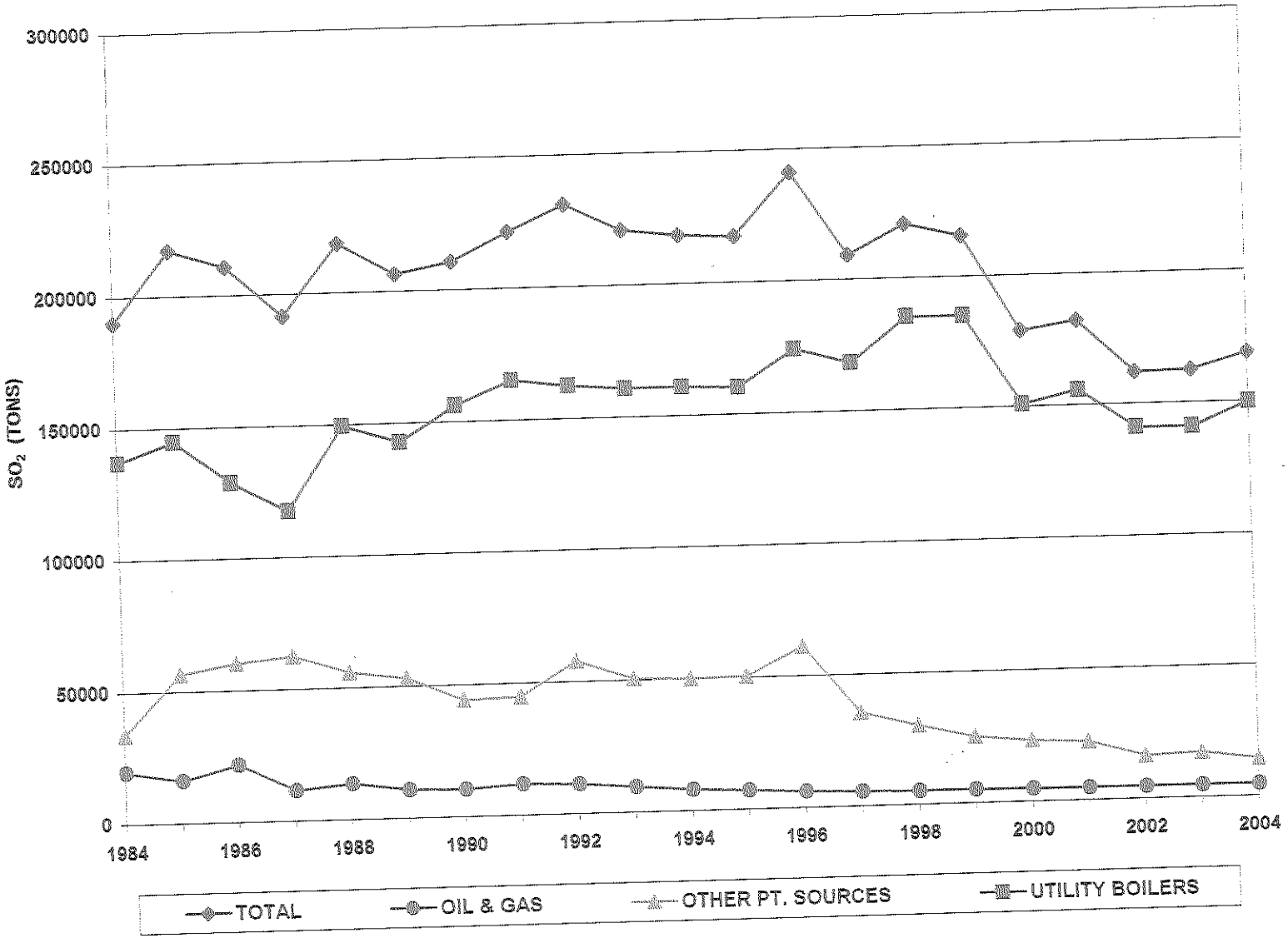
NORTH DAKOTA
SULFUR DIOXIDE
EMISSION SOURCES

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
UTILITY BOILERS (TONS)	149441	142746	156109	164798	162211	160,691	160,630	159,951	173,997	168,222	185,343	185,105	150,771	155,556	141,158	140,905	149,870
OTHER POINT SOURCES (TONS)	55,766	52,986	44,221	44,967	57,752	50,622	50,020	50,389	61,146	35,536	30,161	25,239	23,290	22,180	16,233	17,021	14,145
TOTAL FROM MAJOR POINT SOURCES (TONS)	205,207	195,733	200,330	209,765	219,963	211,313	210,650	210,340	235,143	203,758	215,504	210,344	174,061	177,736	157,391	157,926	164,015
OIL & GAS WELLS (TONS)	13,351	10,714	10,217	11,568	11,048	9,482	7,769	7,063	5,935	5,448	4,943	4,943	4,893	4,607	4,600	4,600	4,600
TOTAL SO_2 EMISSIONS FROM ALL SOURCES (TONS)	218558	206447	210547	221333	231011	220,795	218,419	217,403	241,078	209,206	220,447	215,287	178,954	182,343	161,991	162,526	168,615
TOTAL HEAT INPUT FOR UTILITY BOILERS (Btu's)	2.84E+14	2.72E+14	2.86E+14	2.91E+14	3.01E+14	3.03E+14	3.04E+14	2.98E+14	3.12E+14	2.97E+14	3.15E+14	3.17E+14	3.41E+14	3.39E+14	3.40E+14	3.45E+14	3.43E+14
AVG. SO_2 EMISSIONS FROM UTILITY BOILERS ($Lb/10^6$ Btu)	1.05	1.05	1.09	1.13	1.08	1.06	1.06	1.07	1.11	1.13	1.18	1.17	0.88	0.92	0.83	0.82	0.87
TOTAL COAL BURNED BY UTILITY BOILERS (TONS)	21,689,958	20,604,605	21,578,227	22,173,466	23,147,642	23,142,227	23,253,437	22,629,264	23,558,636	22,682,106	24,239,789	24,460,123	25,135,118	24,670,644	25,224,324	25,237,829	24,961,447

NOTE: 2002 - 2004 OIL AND GAS WELL EMISSIONS ESTIMATED FROM 2001 DATA.

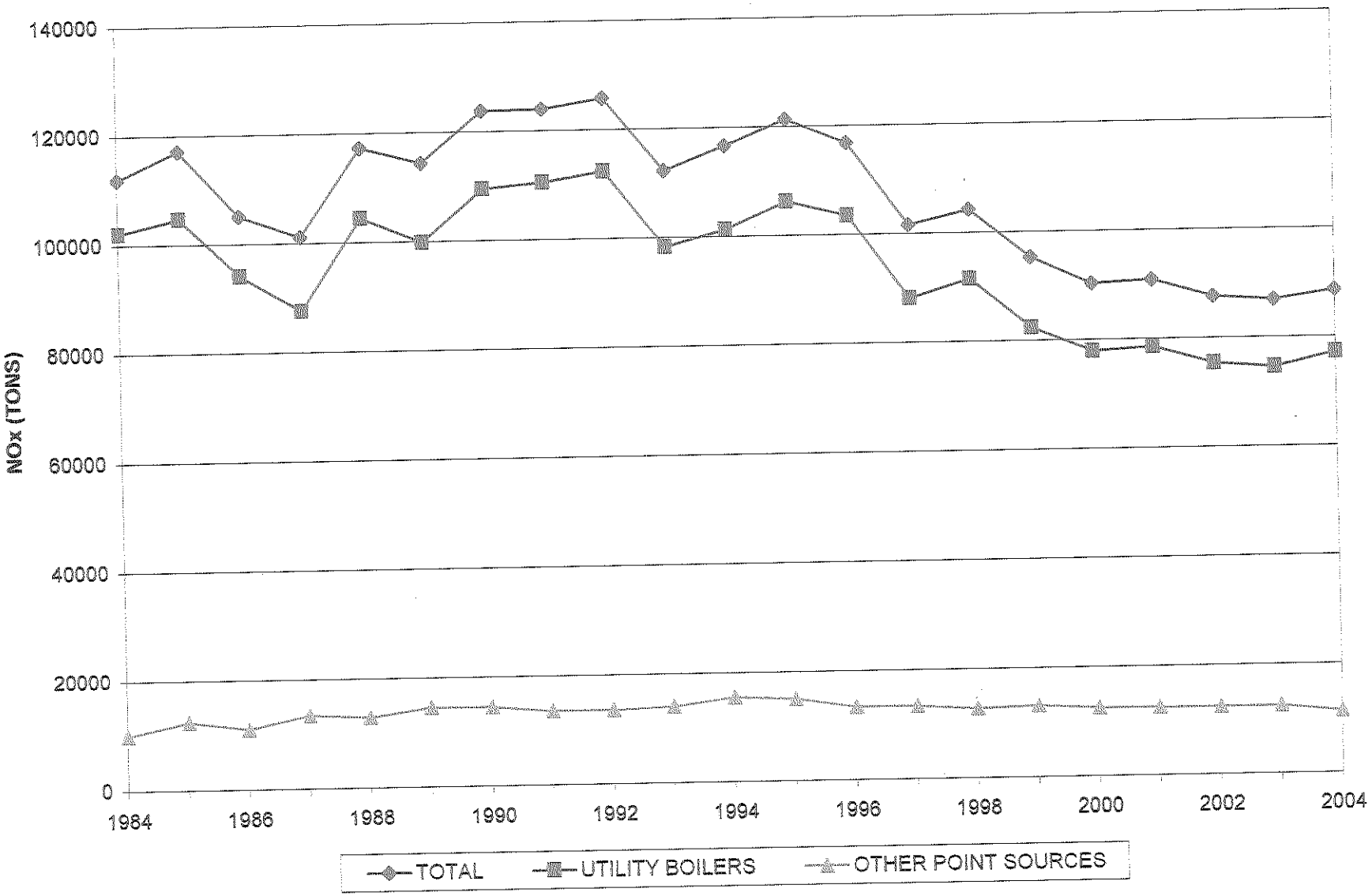
NORTH DAKOTA
SO_2 EMISSIONS



NORTH DAKOTA
NITROGEN OXIDES
EMISSION SOURCES

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Utility Boilers (Tons)	104380	99796	109384	110463	112304	98227	101218	106258	103481	88175	91505	82322	77,859	78,467	75,362	74,538	77,136
Other Point Sources (Tons)	12830	14497	14409	13488	13485	13939	15402	14973	13293	13345	12676	12995	12,496	12,408	12,327	12,430	11,290
Total from Major Point Sources (Tons)	117210	114293	123793	123951	125789	112166	116618	121231	116774	101520	104181	95317	90,355	90,875	87,689	86,968	88,426
Oil and Gas Wells (Tons)	348	233	273	288	393	372	333	360	392	249	165	187	213	202	200	200	200
Total NOx Emissions All Sources (Tons)	117558	114526	124066	124239	126182	112538	116951	121591	117166	101769	104346	95504	90568	91077	87889	87,168	88626
Total Heat Input for Utility Boilers (BTU's)	2.842E+14	2.718E+14	2.863E+14	2.912E+14	3.010E+14	3.029E+14	3.037E+14	2.983E+14	3.122E+14	2.971E+14	3.147E+14	3.171E+14	3.41E+14	3.39E+14	3.40E+14	3.45E+14	3.43E+14
Avg. NOx Emiss. Rate for Util. Boilers (lb/MMBtu)	0.73	0.73	0.76	0.76	0.75	0.65	0.67	0.71	0.66	0.59	0.58	0.52	0.46	0.46	0.44	0.43	4.50E-01
Total Coal Burned by Util. Boilers (Tons)	21689958	20604605	21578227	22173466	23147642	23142227	23253440	22629264	23558640	22662106	24239789	24460123	25135118	23986343	25224324	25,237,829	24,961,447

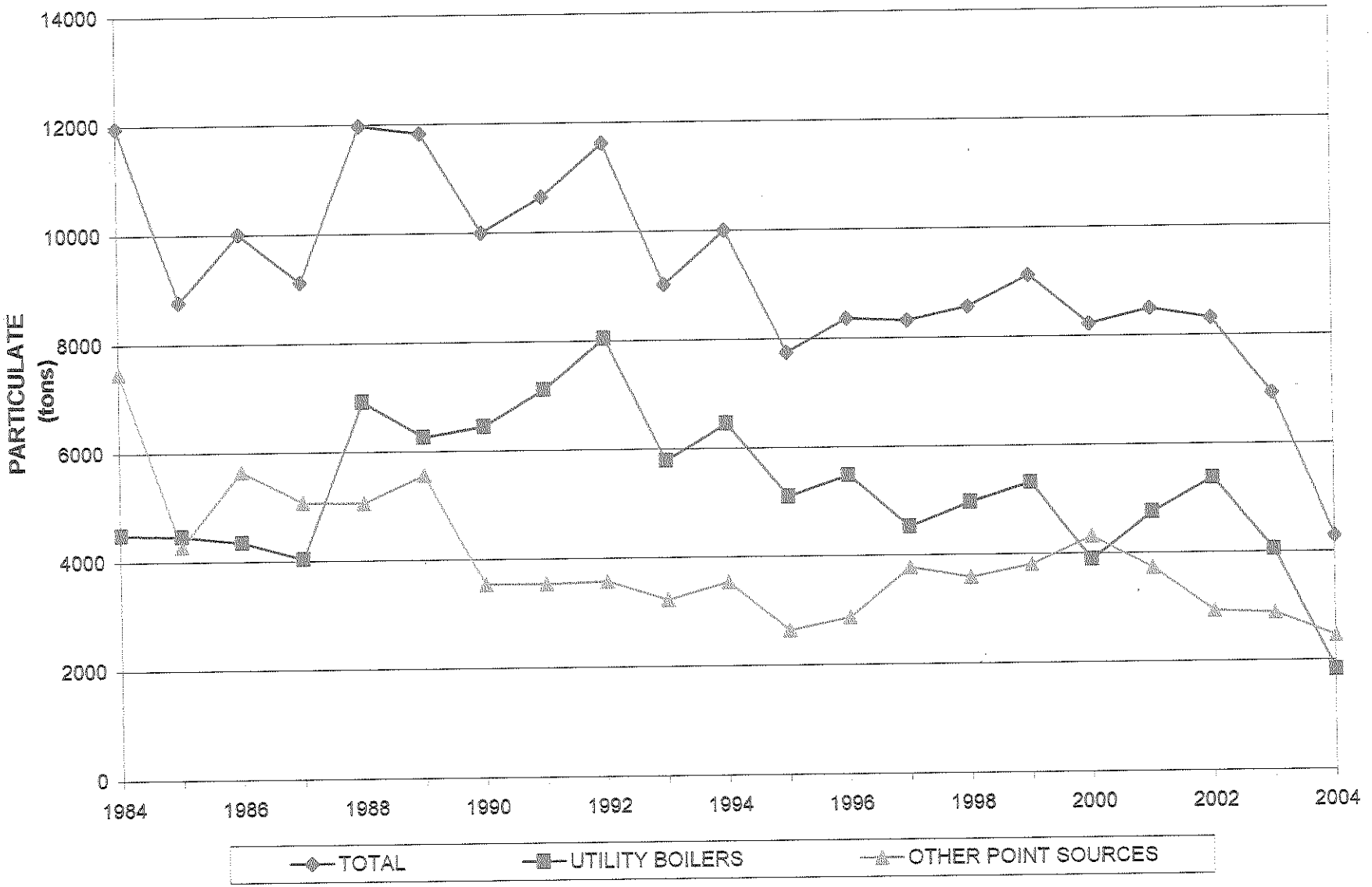
NORTH DAKOTA
NO_x EMISSIONS



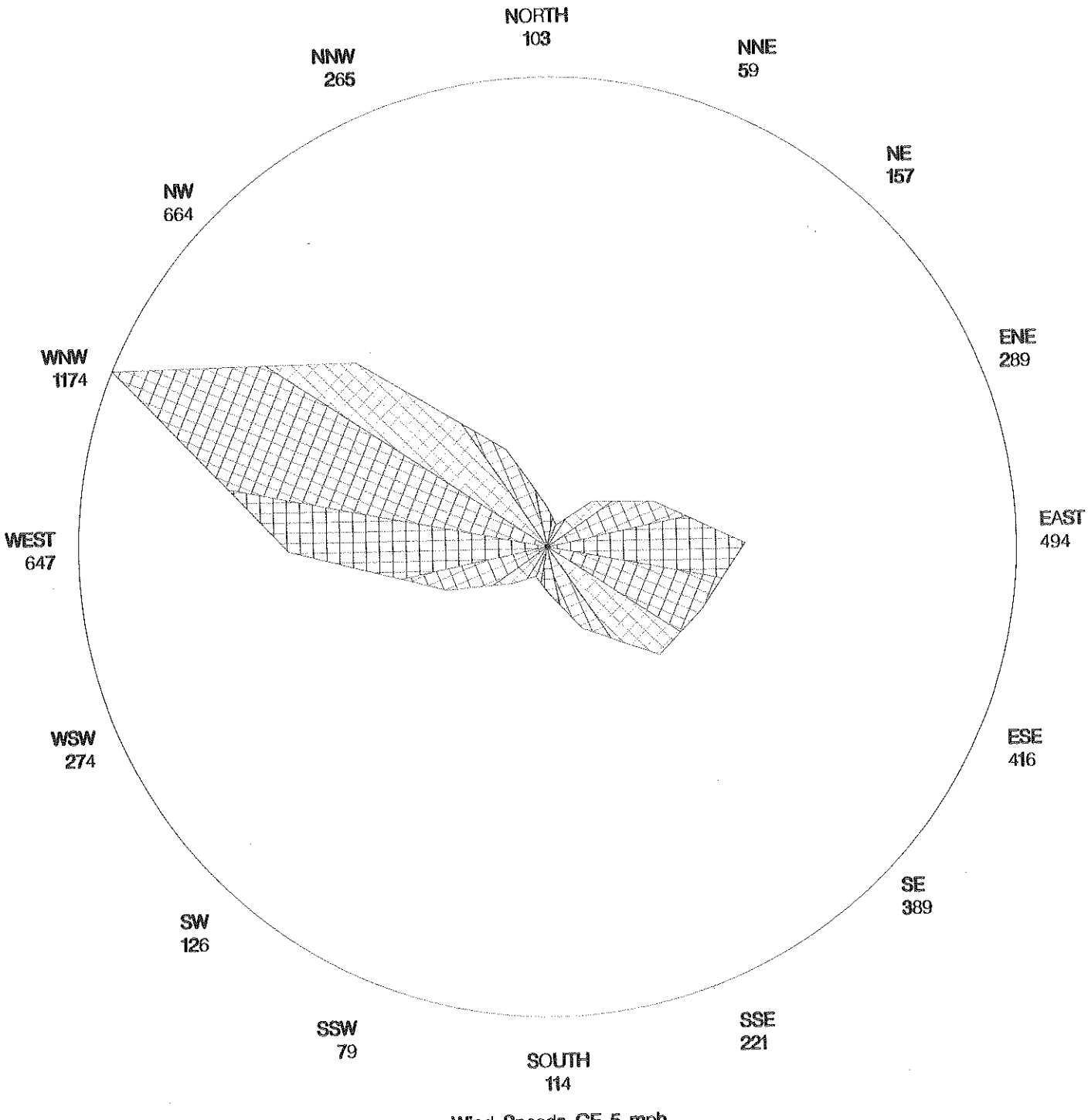
NORTH DAKOTA
PARTICULATE MATTER
EMISSION SOURCES

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
UTILITY BOILERS (TONS)	6,911	6,270	6,450	7,107	8,039	5,785	6,459	5,098	5,474	4,529	4,969	5,309	3,892	4,765	5,368	4,060	1,829
OTHER POINT SOURCES (TONS)	5,056	5,558	3,543	3,540	3,576	3,229	3,540	2,649	2,876	3,773	3,586	3,811	4,319	3,729	2,939	2,896	2,467
TOTAL FROM MAJOR POINT SOURCES (TONS)	11,967	11,828	9,993	10,647	11,615	9,014	9,999	7,747	8,350	8,302	8,555	9,120	8,211	8,494	8,307	6,956	4,296
TOTAL HEAT INPUT FOR UTILITY BOILERS (Btu's)	2.84E+14	2.72E+14	2.86E+14	2.91E+14	3.01E+14	3.03E+14	3.04E+14	2.98E+14	3.12E+14	2.97E+14	3.15E+14	3.17E+14	3.41E+14	3.39E+14	3.40E+14	3.45E+14	3.43E+14
AVG. PM EMISSIONS FROM UTILITY BOILERS (LB/10^6 Btu)	0.049	0.046	0.045	0.049	0.053	0.038	0.043	0.034	0.035	0.030	0.032	0.033	0.023	0.028	0.032	0.024	0.011
TOTAL COAL BURNED BY UTILITY BOILERS (TONS)	21,689,958	20,604,605	21,578,227	22,173,466	23,147,642	23,142,227	23,253,437	22,629,264	23,558,636	22,682,106	24,239,789	24,460,123	25,135,118	24,670,644	25,224,324	25,237,629	24,961,447

NORTH DAKOTA
PARTICULATE EMISSIONS

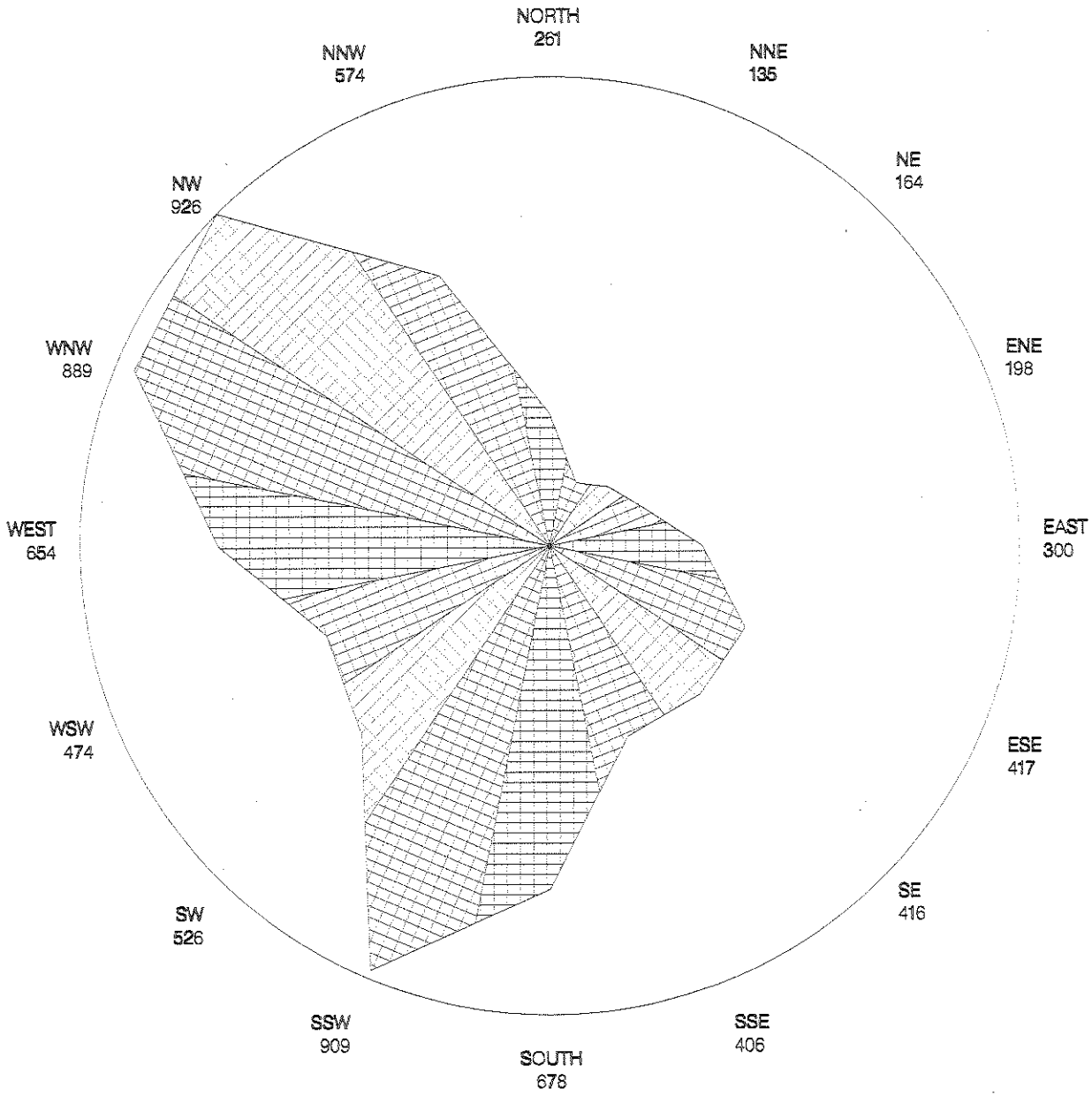


TRNP – NU Wind Direction Star Chart during 2002



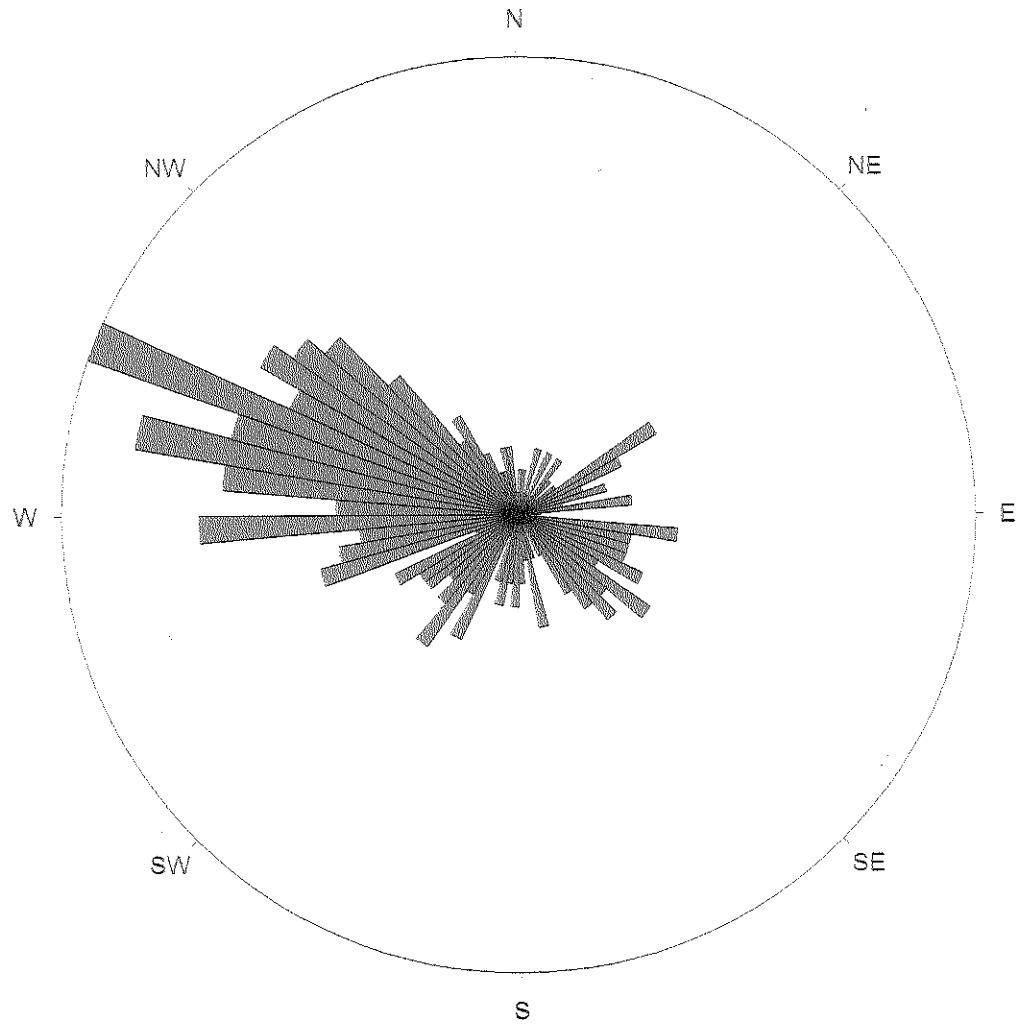
Wind Speeds GE 5 mph

TRNP – SU (Painted Canyon) Wind Direction Star Chart during 2002



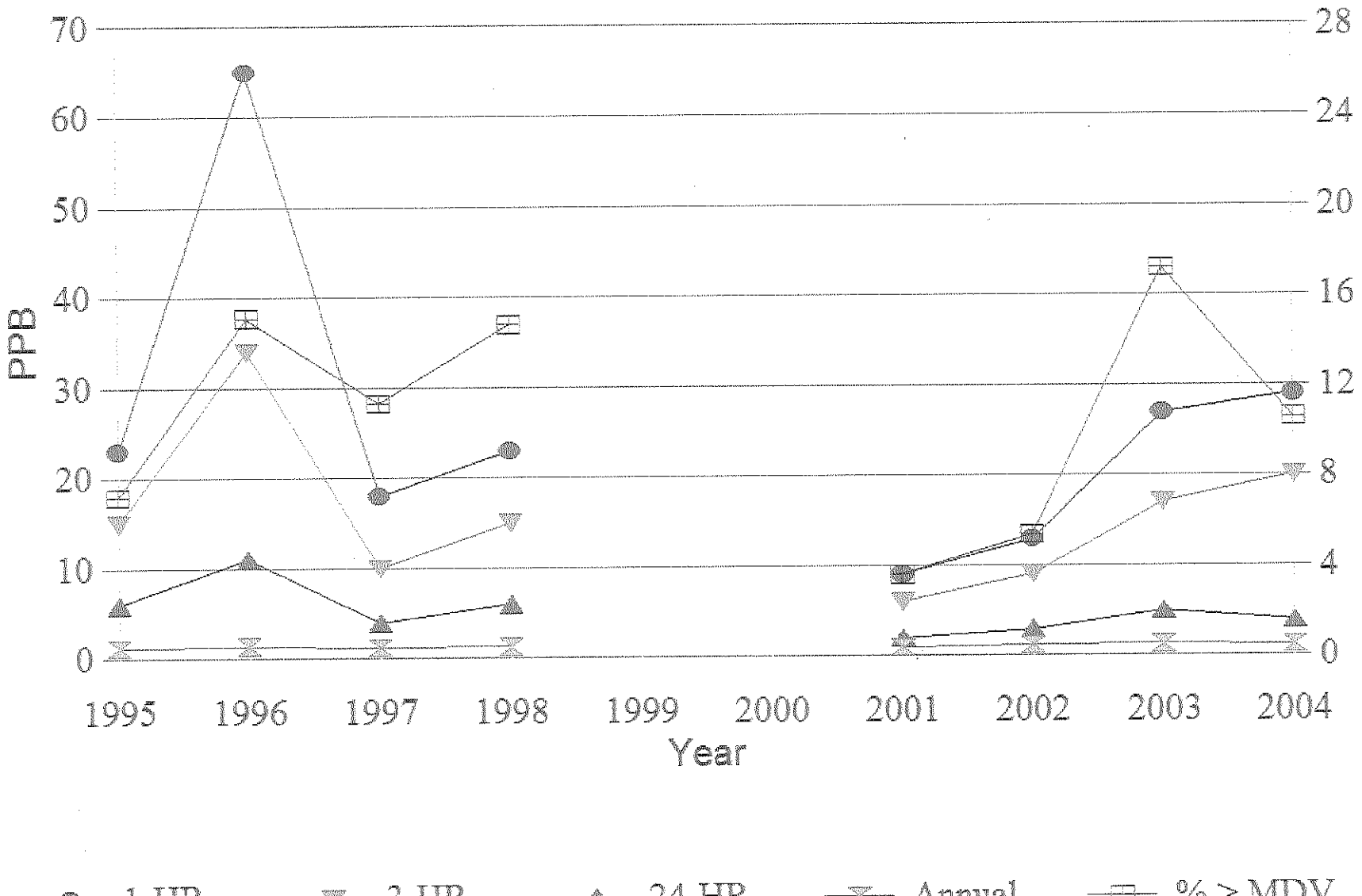
Wind Speeds GE 5 mph

BOWBELLS, ND
WIND DIRECTION
2002



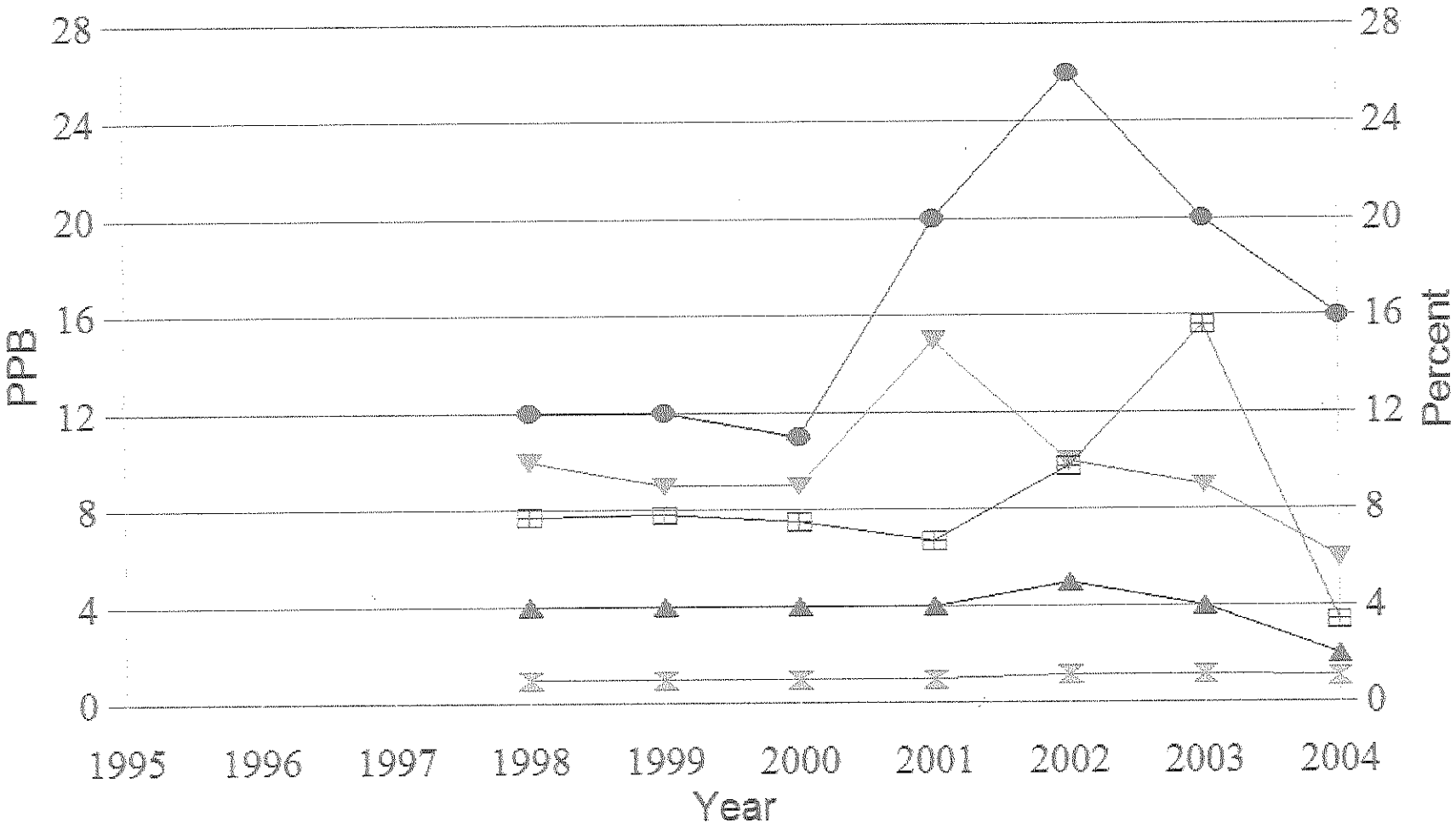
TRNP - NU

Sulfur Dioxide



TRNP - SU

Sulfur Dioxide



Appendix B

Comments on Draft Report and the Department's Response

United States Department of the Interior

NATIONAL PARK SERVICE
Air Resources Division
P.O. Box 25287
Denver, CO 80225

IN REPLY REFER TO:

September 15, 2005

N3615 (2350)

Terry L. O'Clair, Director
Division of Air Quality
Environmental Health Section
North Dakota Department of Health
P.O. Box 5520
Bismarck, North Dakota 58506-5520

Dear Mr. O'Clair: Terry:

The National Park Service (NPS) appreciates the opportunity to review the draft Report on Progress Made Toward the National Visibility Goal, August 2005, prepared by your office. We offer the following comments on the draft periodic report for your consideration in finalizing the document.

Section II.C. Any change in visibility since the last report:

This section of the report discusses a possible trend in visibility for Theodore Roosevelt National Park (NP) using data that has been collected at the park's south unit for a relatively short period of time (late 1999 to early 2004). Due to the lack of a long period of recorded on-site data, it is highly unlikely that any actual trend in visibility can be established with any certainty, especially given the high variability in meteorological conditions that affects air quality at a specific monitoring site. We agree with the statement in the report that "establishment of a definitive trend may require additional data."

Rather than presenting the park's visibility data as an average of all data points for this time period (Figure 3 in the report), the State could begin to look at the best 20% days and worst 20% days of impairment in separate plots consistent with measures required by the regional haze rule that the State is now in the process of addressing. Displaying the information in this manner would be much more informative to the public and useful in future State implementation plan development for regional haze.

Page 20 of the report discusses prevailing winds measured in the North and South units of Theodore Roosevelt NP as a basis to conclude that major in-State air pollution sources, mostly electric utilities and energy facilities located generally east of the park units, would have limited impacts on the park. Annual average wind roses for the North and South units of the park as presented in Appendix A.4 do little to inform the degree of visibility impairment that can occur in the park on any given day. Visibility conditions are important on a daily basis, and we believe it is inappropriate to use this simplistic approach to discount the possibility that some of the worst visibility days at the park may be due to in-State sources of visibility impairing pollutants. A more rigorous assessment using a variety of deterministic and receptor modeling approaches and other relevant data is needed to support any conclusions about sources affecting visibility at the park.

The report cites the NPS's document "Air Quality in the National Parks", Second Edition, September 2002, to reference deposition data for sulfate ion concentrations in Theodore Roosevelt NP for the years 1990-1999. We must caution you on the use of dated data. The NPS reports trends annually based on the most recent ten years of data. Unfortunately, trends could not be calculated for Theodore Roosevelt NP in our most recent report (1994-2003) because of insufficient data. (See Figure 1, enclosed). Therefore, no trends can be reasonably indicated for the park for any of the air quality indicators through 2003 using the NPS methodology. Consequently, any conclusions the State has derived from comparison to outdated assessments should be reevaluated based on the most recent information.

The draft report (on page 21 and Appendix A.5) implies that average concentrations of sulfur dioxide (as well as nitrogen oxides and PM 10) measured in the North and South units of the park are somehow indicative of an improving or steady state visibility trend. In NPS comments on past State periodic review reports, we have stated that North Dakota's use of ambient measurements of these pollutants to draw conclusions about visibility conditions is not appropriate. Sulfur dioxide, nitrogen oxides, and PM 10 have no to minimal influence on atmospheric visibility, especially relative to aerosol species such as sulfates, nitrates, organic and elemental carbon, and total PM 2.5. In addition, using average concentrations on an annual basis provides no useful information with respect to demonstrating progress toward the national visibility goal under the regional haze program that the State will need to adopt in the near future.

We hope these comments will help as you develop your final report assessing the progress and needs of State programs to protect visibility in mandatory Class I Federal areas, including Theodore Roosevelt National Park. We also look forward to working with you and your staff as you move into development of a regional haze program over the next couple of years. If you have any questions or need assistance from the NPS in either of these endeavors, please contact Brian Mitchell at 303-969-2819.

Sincerely,

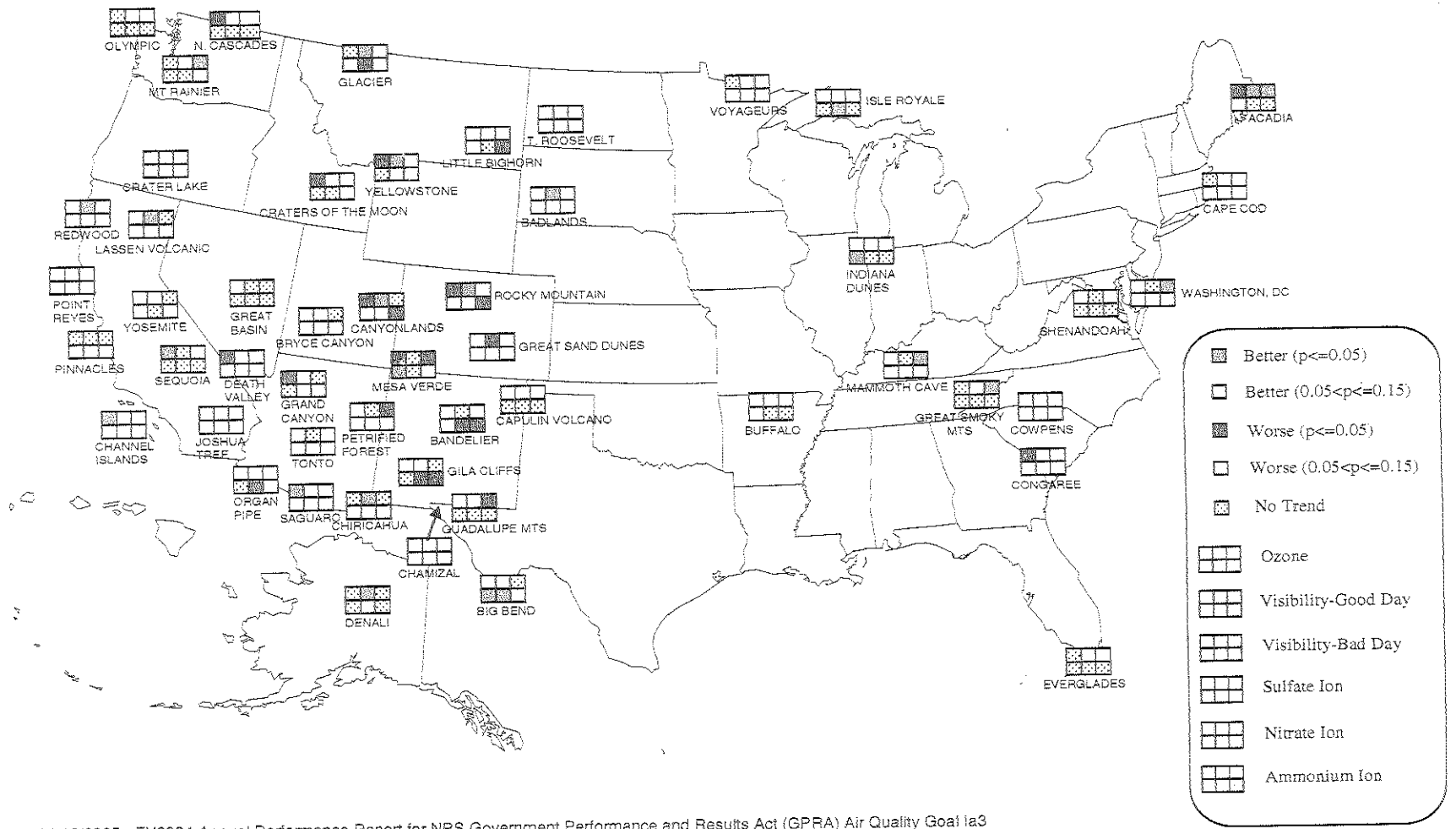
Christine L. Shaver
Chief, Air Resources Division
National Park Service

Enclosure (1)

cc:
Richard R. Long
Director, Air and Radiation Program
EPA Region 8
999 18th Street, Suite 300
Denver, Colorado 80202-2466

Figure 1

Air Quality Trends in National Parks, 1994-2003



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October 31, 2005

Ms. Christine Shaver
Chief, Air Resources Division
National Park Service
P.O. Box 25287
Denver, CO 80225

Dear Ms. Shaver:

The Department appreciates your letter of September 15, 2005 that provided comments on our draft Report on Progress Made Toward the National Visibility Goal.

With respect to presenting data on the 20% worst and 20% best days of visibility impairment, we believe this data is more appropriately addressed in the upcoming regional haze SIP. The Department will be evaluating these time periods and presenting that information in that SIP submittal.

We believe the presentation of the wind rows in the document provides useful information to the average citizen who is not well informed on North Dakota's meteorological conditions. As such, we intend on retaining these attachments in the final document.

For the preparation of this report, we used the latest information that was available. As such, we used the National Park Service's document, "Air Quality in the National Park's, Second Edition, 2002." You have indicated there is no more recent data available for the Theodore Roosevelt National Park. We have noted this in our final document.

With respect to the graphs showing the ambient concentration of sulfur dioxide in the Theodore Roosevelt National Park, we believe this provides the reader additional information to evaluate the overall air quality within the park. Sulfur dioxide is a precursor to sulfate which produces visibility impairment. We further believe it is important to note the location of North Dakota's sources of sulfur dioxide that impact the nearest Class I area. An increase in SO_2 ambient concentration could indicate an increase in visibility degradation. We believe this provides circumstantial evidence indicating the long-term strategy is currently adequate.

If you have any questions, please feel free to contact us.

Sincerely,

Terry L. O'Clair, P.E.
Director
Division of Air Quality

TLO/TB:saj

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SEP - 7 2005

Ref:8P-AR

Terry O'Clair, Director
Division of Air Quality
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Dear Mr. O'Clair:

We appreciate the opportunity to review your draft 2005 Report on Progress Made Toward the National Visibility Goal, as submitted by you with a letter dated August 3, 2005. We have the following comments on your findings.

Section II.A. The progress achieved in remedying any visibility impairment that is identified in any mandatory Class I Federal area.

Please note a typographical error on p. 9. With the exception of the Gascoyne Generating Station, the NO_x sources' potential to emit should be listed as less than 250 tons/year.

Section II.B. The ability of the long-term strategy to prevent future impairment of visibility in any mandatory Class I Federal area.

On page 11 of the report, it is noted that there has been little industrial growth in North Dakota since the long-term strategy was developed. With respect to preventing future impairment, we are aware of a proposed facility near South Heart, approximately 10 miles from the South Unit of Theodore Roosevelt National Park (TRNP). It would be helpful to add a discussion of how the Department intends to ensure that this new facility, as well as any others in the planning stage, will not impact visibility.

Section II.C. Any change in visibility since the last such report.

The report states that there may be a slight improvement trend in visibility based upon

reviewing the monitoring data presented in Figures 3 and 4. This trend was not readily apparent to EPA from reviewing the graphs. A statistical analysis of the data should be provided to support the claim that conditions are improving. It would also be useful to plot and analyze the data for the 20% cleanest and 20% most impaired days. It is possible a more distinct trend would become apparent in reviewing these data sets.

Figures 5, 6, and 7 show comparisons among various mandatory Class I Federal areas for average impairment and least and most impaired days. While it is interesting to see the comparisons among the Class I areas in the same general vicinity, it would also be useful to include some selected areas from the country with more and less impairment than the North Dakota Class I areas. In this way, the public would be informed on how the visibility in North Dakota's Class I areas compares with a more diverse set.

Table 1, Emissions Summary, summarizes SO_2 data to show a decrease in total emissions since 1988. However, we note that the SO_2 emissions data in Appendix A show that emissions from utility boilers were nearly identical in 1988 and 2004. In fact, SO_2 emissions from utility boilers actually increased somewhat over the 2002-2004 time frame. Since utility boilers are by far the largest SO_2 sources in North Dakota, it is probably more informative for the public to understand that aspect of the data.

On page 20, the text indicates that emissions from the primary sources in North Dakota are transported away from the Class I areas, although there are "limited" times when winds will send contaminants toward the Class I areas. EPA believes that this characterization may understate the visibility impact of North Dakota sources on these Class I areas. In modeling the increment consuming component of North Dakota emission sources on TRNP, EPA's modeling showed a significant impact from North Dakota sources, with a predicted peak 24-hour average impact of 11.4 deciviews (dv), and 98 days during the year when these sources created a perceptible impact (*i.e.*, impact >1 dv). We do not view this impact as "limited."

Appendix A, AIRS Ambient Monitoring Data Summary

It is interesting to note that the 1-hr and 3-hr SO_2 data for TRNP-North Unit and the 1-hr SO_2 data for TRNP-South Unit show increases in recent years. However, we are not sure how informative these graphs are for the public without some further explanation in the text of the report as to the relevance of SO_2 ambient monitoring data to any potential visibility impacts.

We look forward to working with you to ensure that visibility is protected in the mandatory Class I Federal areas impacted by North Dakota activities. If you have any questions on EPA's comments, please call me at 303-312-6005, or have your staff call Amy Platt at 303-312-6449.

Sincerely,

Richard R. Long
Director
Air and Radiation Program

cc: Chris Shaver, NPS
Sandra Silva, USFWS

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October 31, 2005

Richard Long, Director
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Denver, CO 80202-2466

Dear Mr. Dick Long:

This letter is in response to your September 7, 2005 which provided comments on the Department's 2005 Report on Progress Made Toward the National Visibility Goal. With respect to your comments, we have the following responses:

1. In Section II-A, the typo has been corrected.

2. In Section II-B, it was suggested that a discussion of how the Department intends to ensure that new facilities or others in the planning stage will not impact visibility. Additional language has been added to this paragraph indicating that the Department will review these sources as part of the PSD permitting process in accordance with our long-term strategy.

3. Section II-C, the trend towards a decreasing average visibility impairment is quite apparent to us in reviewing the graphs. The trend line that was added to the graph is a statistical analysis based on a "least squares fit". The equations for the trend lines are as follows:

   TRNP $y = -0.00007x + 37.11$
   LWA $y = -0.0004x + 30.24$

   As you can see, the equations for the trend line verify that there is a decrease in average visibility impairment. However, as indicated in the report, we believe more data is needed before a definitive trend can be established.

   With respect to showing visibility degradation in other Class I areas outside the immediate vicinity of North Dakota, we believe that would provide very little useful information and could be confusing. This type of information would only indicate that the eastern United States has worse visibility degradation and the west has less visibility degradation. This

is a condition that is recognized and accepted by the environmental community and thus it was decided that such discussions were not necessary.

SO_2 emissions from utility boilers have actually declined from the previous review period. There was a slight increase in 2004; however, average emission rates for the review period were substantially less than the previous three year period. Overall, sulfur dioxide emissions are substantially lower than when the long term strategy was developed in 1988. One of the major factors for this decrease is the reduction of SO_2 emissions at the Great Plains Synfuels Plant. As you aware, this plant is located right in the heart of coal county near existing electric utility boilers and has similar impacts as some of the utility boilers. To exclude the Great Plains Synfuels Plant and some of the natural gas processing plants that are much closer to the Class I areas from the discussion on the reduction of SO_2 emissions would be misleading and would not provide an accurate picture to the public.

Whether major sources in North Dakota are having a limited impact on Class I areas is subject to debate. With respect to the results you provided from your modeling analysis, we still disagree with the methodology that you employed and no changes to our report are being made based on your comment.

4. With respect to the ambient monitoring data, you will notice that the 24-hour concentrations at the South Unit at Theodore Roosevelt National Park are decreasing during the last review period. At the North Unit, concentrations are substantially less than concentrations in the mid 90's. An increase in ambient SO_2 concentrations could also signify an increase in visibility impairment. Since North Dakota's major SO_2 sources are located more than 100 km from the Class I areas, we believe that the ambient monitoring data is circumstantial evidence that our long term strategy is adequate for sources under our jurisdiction.

If you have any questions, please feel free to contact us.

Sincerely,

Terry L. O'Clair, P.E.
Director
Division of Air Quality

TLO/TB:csc